

REMARKS/ARGUMENTS

Claims 1–21 and 32–36 are pending in the above-captioned application. Claims 22–31 and 37 were withdrawn. Claims 1–3, 5–21, and 32–36 have been rejected, and claim 4 has been objected to. Applicants thank the Examiner for his courtesy in discussing the instant application with the undersigned attorney during a telephone interview on October 3, 2005. Claims 1, 15, and 32 were discussed. No agreement was reached. The undersigned attorney was encouraged to present Applicants' arguments in this paper.

I. Rejections Under 35 U.S.C. §102

Claims 1–3, 5, 6, 15–21, and 32–36 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by U.S. Patent No. 5,928,880 (“Wilding”). “[F]or anticipation under 35 U.S.C. § 102, a single reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present.” MPEP § 706.02. “The identical invention must be shown in as complete detail as is contained in the . . . claim.” *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, USPQ2d 1913, 1920 (Fed. Cir. 1989). Applicants must respectfully disagree with the Examiner’s assertion that Wilding teaches every element of the rejected claims and respectfully assert that the identical invention is not shown.

Claim 1 has been amended to more particularly point out and distinctly claim Applicants’ invention. No new matter has been added with the amendment. Support for the detection channel segment extending substantially orthogonally from the second end of the first channel segment (i.e., forming a dogleg) can be found, for example, in Figures 2B, 3A, and 3B. Support for the detection system being an optical detection system can be found, for example, on page 10, line 26, through page 11, line 4, as well as in the preamble to the claim.

With regard to claim 1, Wilding does not teach a detection channel segment that is substantially orthogonal to the plane of the planar body structure, nor does the reference teach that the detection channel extends substantially orthogonally from the second end of the first channel segment. Wilding also does not teach an optical detection system oriented to provide a detection path substantially along a longitudinal axis of the detection channel segment.

The Examiner has indicated that reaction region 117, shown in Figure 6A of Wilding, corresponds to Applicants' detection channel segment; and the channel between appliance inlet port 56 and pump 58 corresponds to Applicants' first channel segment. As is clear from Figure 6A, reaction region 117 is separated from the channel between structures 56 and 58 by numerous structures, and so a first end of reaction region 117 cannot extend from a second end of the channel between structures 56 and 58. Further, while reaction region 117 is orthogonal to the channel between structures 56 and 58, it is parallel, rather than orthogonal, to the planar orientation of the body structure assembled from sample preparation device 10, analytical device 112, and appliance 50. Similarly, the channel formed between structures 56 and 58 is orthogonal, rather than parallel, to the planar orientation of the body structure of the assembly. Thus, the allegedly corresponding structures of Wilding are rotated 90 degrees from the structures claimed by Applicants and so do not meet the limitations of claim 1.

Even if reaction region 117 were considered to be the equivalent of the first channel segment claimed by Applicants, and the channel between inlet port 56 and pump 58 were considered to be the equivalent of the detection channel segment claimed by Applicants, the detection path could not be along a longitudinal axis of the detection channel segment because the detection path in Figure 6A must be between pressure detectors 59a and 59b and, thus, parallel to the major plane of the assembly formed by sample preparation device 10, analytical device 112, and appliance 50.

Further, the detection system of Figure 6A is pressure based rather than optical. Wilding does teach an optical detection system in connection with Figures 6B and 9; however, the optical detection path in these embodiments is through a transparent portion of a device cover or through an optical window disposed over a detection chamber. In both cases, the detection path is across the channel or detection chamber, as is typical of the prior art devices described by Applicants on page 1, lines 23–25, and on page 4, lines 18–28, and is limited by the cross-sectional dimension of the detection channel or chamber. Because Applicants' detection path is along the length of the detection channel segment, the detection path length and/or sample material volume is increased, thereby increasing the signal level and sensitivity of an assay.

With regard to claim 15, the detection channel segment is described as being in a plane substantially orthogonal to the plane of the body structure. As shown above, Wilding does

not teach a detection channel having this orientation. Also as shown above, Wilding does not teach an optical detector oriented to direct and receive light along a detection path that is parallel to the plane within which the detection channel segment lies. The assembly of Figure 6A does not include, nor would it be either easy or obvious to modify it to include, an optical detector. The optical detectors taught by Wilding in connection with Figures 6B and 9 do not operate within the limitations of Applicants' claim 15.

With regard to claim 21, as previously shown, Wilding does not teach a detection channel disposed substantially orthogonally to the major plane of the body structure. Wilding also does not teach an optical detector positioned to direct and/or receive optical energy in a direction parallel to the detection channel segment through an end of the detection channel segment. As discussed above, the optical detectors taught by Wilding operate across a detection channel segment, rather than parallel to, i.e., along the length of, the channel segment.

With regard to claim 32, as demonstrated above, Wilding does not teach providing a planar microfluidic device having a detection channel segment that is substantially orthogonal to a major plane of the planar microfluidic device. Wilding also does not teach directing an optical detection path through sample material at an angle that is substantially parallel to the longitudinal axis of the detection channel segment. As described above, the optical detection paths taught by Wilding cut across the segments, not along their lengths.

Thus, Wilding does not teach every aspect of the claimed invention either explicitly or impliedly, nor does it show the identical invention claimed by Applicants in as complete detail as is contained in independent claims 1, 15, 21, and 32. Withdrawal of the rejection of these claims under U.S.C. § 102(b) as being anticipated by Wilding is, therefore, respectfully requested.

Claims 2, 3, 5, and 6 depend from claim 1; claims 16–20 depend from claim 15; and claims 33–36 depend from claim 32. These dependent claims are by definition narrower than claims 1, 15, and 32 and, as such, must be allowable over Wilding if Wilding does not anticipate claims 1, 15, and 32. Accordingly, Applicants respectfully assert that Wilding does not anticipate any of claims 2, 3, 5–21, and 33–36. Withdrawal of the rejection of these claims under U.S.C. § 102(b) as being anticipated by Wilding is, therefore, respectfully requested.

II. Rejections Under 35 U.S.C. §103

Claims 7–14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Wilding. To warrant rejection under 35 U.S.C. § 103(a), all the claim limitations must be taught or suggested by the prior art. See MPEP § 2142. As demonstrated above, the Wilding reference neither teaches nor suggests all of the limitations of Applicants' amended claim 1. Thus, claim 1 is nonobvious. Claims 7–14 depend directly from claim 1. Any claim depending from a nonobvious claim is also nonobvious. See MPEP § 2143.03 and *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988). Therefore, dependent claims 7–14 are nonobvious. Withdrawal of the rejection of these claims as being unpatentable over Wilding is, therefore, respectfully requested.

III. Allowable subject matter

Claim 4 was objected to as being dependent upon a rejected base claim but was deemed allowable if rewritten in independent form to include limitations of the base claim and any intervening claims. Claim 4 depends directly from claim 1, which has been demonstrated above to be allowable. Therefore, claim 4 is allowable as originally presented.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants believe that the present application is in condition for allowance, and action toward that end is respectfully requested. If the Examiner believes that a telephone interview would expedite the examination of this application, the Examiner is requested to contact the undersigned at the telephone number below.

Respectfully submitted,



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I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on **October 4, 2005** by Michael Moores.

Signed:  _____